

In the claims:

1. **(currently amended)** A method of preparing a fibrous protein smectic hydrogel, comprising:
 - a. ~~[[pouring]]~~ contacting an aqueous fibrous protein solution ~~[[into a container comprising]]~~ with a solvent that is not miscible with water;
 - b. ~~[[sealing the container and]]~~ allowing ~~[[it]]~~ the solution in contact with the solvent to age at about room temperature or under conditions preventing evaporation or both; and
 - c. collecting the resulting fibrous protein smectic hydrogel; and optionally allowing ~~[[it]]~~ the hydrogel to dry.
2. **(original)** The method of claim 1, wherein the solvent is chloroform.
3. **(original)** The method of claim 1, wherein the solvent is iso-amyl alcohol.
4. **(original)** The method of claim 1, wherein the solvent is hexane.
5. **(original)** The method of claim 1, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.
6. **(original)** The method of claim 1, wherein the fibrous protein is silk.
7. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight.
8. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight.
9. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is iso-amyl alcohol.
10. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is iso-amyl alcohol.

11. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is chloroform.
12. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is chloroform.
13. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than about 4% by weight, the fibrous protein is silk, and the solvent is hexane.
14. **(original)** The method of claim 1, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight, the fibrous protein is silk, and the solvent is hexane.
15. **(original)** The method of claim 1, wherein the smectic hydrogel is a bulk solid hydrogel comprising several ordered layers of the fibrous protein.
16. **(currently amended)** A method of obtaining predominantly one enantiomer from a ~~[[racemic]]~~ mixture of enantiomers, comprising the steps of:
 - a. ~~[[pouring]]~~ contacting an aqueous fibrous protein solution ~~[[into a container comprising]]~~ with a solvent that is not miscible with water;
 - b. ~~[[sealing the container and]]~~ allowing ~~[[it]]~~ the solution in contact with the solvent to age at about room temperature or under conditions preventing evaporation or both;
 - c. allowing the enantiomers of the ~~[[racemic]]~~ mixture to diffuse selectively into the resulting fibrous protein smectic hydrogel in solution;
 - d. removing the smectic hydrogel from the solution;
 - e. rinsing predominantly ~~[[one]]~~ a first enantiomer from the surface of the smectic hydrogel; and

- f. extracting predominantly [[one]] a second enantiomer from the interior of the smectic hydrogel.
17. **(original)** The method of claim 16, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.
 18. **(original)** The method of claim 16, wherein the fibrous protein is silk.
 19. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than about 4% by weight.
 20. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight.
 21. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than about 4% by weight and the fibrous protein is silk.
 22. **(original)** The method of claim 16, wherein the fibrous protein solution is present in greater than or equal to about 8% by weight and the fibrous protein is silk.
 23. **(original)** The method of claim 16, wherein the smectic hydrogel is a bulk solid hydrogel comprising several ordered layers of the fibrous protein.
 24. **(original)** A fibrous protein smectic hydrogel prepared according to the method of claim 1.
 25. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and seroins.
 26. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein is silk.
 27. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.
 28. **(original)** The fibrous protein smectic hydrogel of claim 25, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.

29. **(original)** The fibrous protein smectic hydrogel of claim 26, wherein the fibrous protein smectic hydrogel is greater than or equal to about 38 nm thick.
30. **(original)** The fibrous protein smectic hydrogel of claim 24, wherein the fibrous protein smectic hydrogel is a bulk solid comprising several ordered layers of the fibrous protein.
31. **(new)** A chiral composition comprising a liquid crystalline ordered solid having a nanoscale multilayered structure, wherein each layer comprises a molecularly oriented fibrous protein, and wherein the layers define an interlayer region having nanoscale chiral pores or channels.
32. **(new)** The composition of claim 31, wherein the solid is a hydrogel.
33. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a smectic phase.
34. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a chiral smectic phase.
35. **(new)** The composition of claim 31, wherein the liquid crystalline ordering comprises a chiral liquid crystalline phase.
36. **(new)** The composition of claim 31, wherein the fibrous protein is selected from the group consisting of silk, collagens, keratins, actins, chorions, and serions.
37. **(new)** The composition of claim 36, wherein the fibrous protein is silk.
38. **(new)** The composition of claim 31, wherein the liquid crystalline order persists to macroscopic length scales on the order of millimeters or centimeters.
39. **(new)** The composition of claim 31, wherein the fibrous protein includes endblocks that promote localization of a solute molecule added to the composition to the interlayer region.
40. **(new)** The composition of claim 31, further comprising an enzyme incorporated into the chiral composition.

41. (new) The composition of claim 31, further comprising a catalyst incorporated into the chiral composition.
42. (new) A method of obtaining predominantly one enantiomer from a mixture of enantiomers of a chiral molecule, the method comprising:
 - a) contacting the mixture of enantiomers with a chiral composition comprising a liquid crystalline ordered solid having a nanoscale multilayered structure, wherein each layer comprises a molecularly oriented fibrous protein, and wherein the layers define an interlayer region having nanoscale chiral pores or channels; and
 - b) isolating predominantly one enantiomer within the chiral composition.
43. (new) The method of claim 42, further comprising extracting the enantiomer isolated within the chiral composition.
44. (new) The method of claim 42, wherein contacting the mixture of enantiomers with the chiral composition comprises allowing the enantiomers to diffuse selectively into the chiral composition in solution.
45. (new) The method of claim 44, further comprising removing the chiral composition from the solution and rinsing predominantly another enantiomer from the surface of the chiral composition.
46. (new) The method of claim 42, wherein the mixture of enantiomers is contacted with a membrane including the chiral composition, and wherein predominantly one enantiomer is isolated within the membrane and predominantly another enantiomer is allowed to pass through the membrane.
47. (new) An isolated silk protein oriented to provide chiral surfaces capable of use as a chiral selector in a chiral separation.
48. (new) The use of an isolated silk protein as a chiral selector in a chiral separation.